

WHAT IS CLAIMED IS:

5 1. A data switch comprising an input port, an output  
port and a memory coupled therebetween, characterized in that  
the data switch generates a discard processing indicator for a  
packet received on the input port, segments the packet into ones  
of units, and appends the discard processing indicator to the  
ones of units, further characterized in that the data switch  
10 compares the discard processing indicator appended to the ones  
of units with a discard criterion to determine whether to  
discard the ones of units.

15 2. The data switch of claim 1, wherein the discard  
processing indicator is a random number.

20 3. The data switch of claim 1 further characterized in  
that the data switch stores the ones of units in the memory if  
the units are determined not to be discarded.

25 4. The data switch of claim 1 further characterized in  
that the discard criterion is dynamically selected in accordance  
with a utilization level of an output queue to which the ones  
of units are destined.

30 5. The data switch of claim 4 further characterized in  
that the data switch appends a timestamp to the ones of units  
for determining a utilization level of the output queue at a  
time indicated by the timestamp.

35 6. The data switch of claim 1, wherein the ones of units  
are units of a fixed length.

7. A data switch comprising:

an input port generating a tag including a discard  
5 processing indicator for appending to ones of input units  
segmented from an input data packet;

an output port including one or more output queues, each  
output queue storing an output unit;

a switch fabric operative between the input port and the  
10 output port, the switch fabric including a congestion controller  
retrieving a level of utilization of an output queue to which  
a particular input unit is destined and selecting the input unit  
for discard or not based on the discard processing indicator in  
the tag appended to the input unit.

15 8. The data switch of claim 7 wherein the switch fabric  
includes a memory storing non-discarded units for forwarding to  
the output port.

20 9. The data switch of claim 7, wherein the congestion  
controller compares the discard processing indicator with a  
discard criterion selected in accordance with the utilization  
level of the output queue.

25 10. The data switch of claim 7, wherein the utilization  
level of the output queue is selected based on a timestamp  
included in the tag.

30 11. The data switch of claim 7, wherein the discard  
processing indicator is a random number.

12. The data switch of claim 7, wherein the output port  
transmits to the switch fabric congestion status updates

including queue utilization levels for the one or more output queues.

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13. A method for congestion control in a data switch including an input port, an output port, and a memory coupled therebetween, the method comprising:

10 generating a number for a packet received on the input port;

segmenting the packet into ones of units;

appending the number to the ones of units; and

15 individually comparing the number appended to the ones of units with a discard criterion for determining whether to discard the packet.

14. The method of claim 13, wherein the number is a random number.

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15. The method of claim 13 further comprising storing the ones of units in the memory if the units are determined not to be discarded.

25 16. The method of claim 13, further comprising selecting a discard criterion in accordance with a utilization level of an output queue to which the ones of units are destined.

30 17. The method of claim 16 further comprising the step of appending a timestamp to the ones of units for determining a utilization level of the output queue at a time indicated by the timestamp.

18. A method for congestion control in a data switch, the method comprising:

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generating a tag including a discard processing indicator;  
appending the tag with the discard processing indicator to  
5 each unit segmented from an input data packet;

determining a level of utilization of an output queue to  
which a particular unit of the input data packet is destined;

determining a discard criterion in accordance with the  
determined level of utilization; and

10 discarding the particular unit based on a conformance of  
the discard processing indicator in the tag appended to the  
particular unit with the discard criterion.

15 19. The method of claim 18, wherein the determining of  
the level of utilization of the output queue comprises selecting  
a level of utilization for the output queue based on a timestamp  
included in the tag appended to the particular unit.

20 20. The method of claim 18, wherein the discard  
processing indicator is a random number.

25 21. The method of claim 18 further comprising  
transmitting to the switch fabric congestion status updates  
including a queue utilization level of the output queue.

30 22. A data switch comprising an input port, an output  
port and a memory coupled therebetween, characterized in that  
the data switch generates a uniform discard processing indicator  
for a packet received on the input port, segments the packet  
into ones of units, and appends the uniform discard processing  
indicator to the ones of units, further characterized in that  
the data switch compares for each of the ones of the units the  
uniform discard processing indicator appended thereto with a

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uniform discard criterion for ensuring that the ones of units  
receive a uniform discard decision.

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